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LUNAR NOMENCLATURE.

1. On p. 134 of vol. lxviii. of the *Monthly Notices* there was printed, by the courtesy of the Editors, a circular outlining several alternative proposals for lunar nomenclature. In order to enable the Committee appointed by the International Association of Academies to judge of the reception which such proposals, if definitely put forward, were likely to meet with, four questions were suggested for the consideration of those sufficiently interested. A number of kind replies have been received, and it seems desirable to publish the results for the general information of astronomers.

The replies will first be given in a tabulated form, and then such remarks as cannot be included in the table will be appended.

The opinions of members of the Committee have not been included. Some of them have been provisionally indicated in the circular on p. 134; but they are naturally subject to modification, in the light of information received and of discussion.

The four questions suggested for definite replies were:—

(1) Do you approve the proposal of some mechanical or numerical system of nomenclature *in place of* the old?

(2) Do you approve the proposal of some such system *in addition to* the old?

(3) If such a system is to be adopted, which of the three proposed below seems, on the whole, preferable?

(4) Are your comments and replies intended solely for the Committee, or may they be published if thought desirable?

When this last question has not been expressly answered, initials only are given below: the word 'yes' in column 4 means that permission to publish is expressly given.

So far as they can be definitely tabulated, the answers were as follows:—

Name.	1.	2.	3.	4
T. W. B.	...	...	Puiseux.	
M. A. B.	No.	No.		
W. L. Elkin.	No.	No.	Puiseux.	Yes.
P. F.	No.	No.		
M. E. J. Gheury.	No.	Yes.	Puiseux.	Yes.
W. Goodacre.	No.	No.	...	Yes.
J. A. H.	No.	No.		
F. H.	...	...	Puiseux.	
P. B. Molesworth.	No.	No.	...	Yes.
M. Moye.	No.	No.	...	Yes.
A. Noël Neate.	No.	No.	...	Yes.
C. D. Perrine.	No.	Yes.	Puiseux.	Yes.
E. C. Pickering.	Yes.	No.	W. H. Pickering.	Yes.
H. G. Tomkins.	No.	...	Puiseux.	Yes.
L. Weinek.	No.	No.	...	Yes.
H. C. W.	No.	No.		
Max. Wolf.	No.	No.	...	Yes.

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Additional remarks may be briefly summarised as below :—

T. W. B.:—That part of Professor Pickering's suggestion commends itself in which he proposes to have photographs in different phases for identification of the features.

M. A. B.:—Symbols are not true *names*. . . . Likes Mr. Saunder's proposals better in all respects than the others. . . . There is some force in Dr. Franz's objection to the insertion of long names in a map; but this difficulty might be got over by using abbreviations or numbers, and giving the full name corresponding to them in the margin, or on an opposite page. . . . If the present system of letters for secondary formations be retained, it seems a necessity that the maps should be divided into regions, either by faint dotted red lines, or in some other unequivocal way. . . . In the case of the stars, the present system did not supersede the old, because there was no old system to be superseded.

W. L. Elkin:—M. Puiseux's system seems open to the fewest objections; but Mr. Saunder's proposal simply to designate formations by their selenographical co-ordinates seems far preferable. Possibly the Harvard plan of designating negative values by italics or underlining (*e.g.* *24*, *72* for − 24° long. and − 72° lat.) would be advisable.

M. E. J. Gheury:—Anyone who has used an atlas, such as the Paris photographic Atlas of the Moon, and has appreciated the ease with which descriptions can be followed by means of rectangular co-ordinates, will at once recognise the advantage of such a system over any other. . . . Dr. Franz's proposals may lead to some incoherent sentences unless a different type is used; such a sentence as this might occur: "Some time ago Ago was found brighter simultaneously with Age. . . ." Notes with special pleasure Professor Pickering's recommendation that it should be possible to buy photographs or maps of a single region.

W. Goodacre:—(1) Continue the present names, or substitute others in place of some of them.

(2) Omit double names, and those with a prefix or suffix.

(3) Retain the present names for the seas and mountain ranges.

(4) Divide the disk into areas, each of which would be associated with some dominant formation, the bounding lines of each area to be those suggested by the contour of the surface.

(*a*) The larger crater rings in each area (say of not less than 10 miles in diameter) to be lettered by using Roman capitals.

(*b*) The smaller craters to be numbered, and small Roman letters to be used for other details such as spots, hills, or depressions.

(*c*) Clefts and valleys to be marked by small Greek letters.

J. A. H.:—Would like to see the present names retained. . . . An official list would, of course, have to be drawn up, and this naturally entails a map on which to identify them; photographs

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would not be so efficient as a well-drawn outline map. Speaks here from experience gained in using the Belgian reproductions of the Paris atlas. Small formations are often lost in shadow in just those photographs that show the rest of the region best: if it is attempted to give both illuminations (indeed *three* illuminations, as Professor Pickering wisely demands some plates taken under a high sun), the number of plates required will become excessive.

P. B. Molesworth:—Approves Mr. Saunder's proposals. Has only one amendment to suggest, and that refers to the nomenclature of the 'rills.' Would prefer to see these referred to (like other minor formations) by the name of the principal formation followed by a figure (*e.g.* Triesnecker 4, Gassendi 4). Would in every case give the rills in Schmidt's Catalogue precedence, and would, as far as possible, give them the same consecutive order as in his catalogue.

M. Moye:—We must not drop the old system; we must be content with a new system for minor formations—craterlets, unnamed spots, etc. Prefers Mr. Saunder's proposals.

A. Noël Neate:—Thinks the map should be drawn to a scale of not less than 100 inches to the diameter, and represent the Moon under mean libration.

C. D. Perrine:—Prefers Puiseux's proposals, except that he would start at the meridian and equator and letter *both ways*. Approves atlas as suggested by Professor W. H. Pickering; but suggests printing the plates by heliogravure, though more expensive.

E. C. Pickering:—The question of Lunar Nomenclature is here presented to me for the first time. We have, however, at this Observatory, had occasion to use, frequently, special nomenclatures for faint stars, variables, and other similar objects.

My replies to your questions are as follows:—

(1) Yes. That is, the new system should be independent of the old, although it would be often convenient to use both names. Thus, the variable star T Andromedæ is +26° 43, but we find that the designation, 001726, is a very convenient one. See *H.A.*, **55**, 7.

(2) No. See 1.

(3) That proposed by my brother, Professor W. H. Pickering, with certain modifications. Figures are preferable to letters, especially in printing tables, since all the type have the same width. The type for the letters m and w are much wider than those for f, i, and l. The designations of points on a photograph by their co-ordinates have frequently been found very convenient, in fact almost indispensable, in the *Harvard Annals*. See *H.A.*, **26**, 220, **51**, 4, also *H.C.*, 71. The use of the telephone and the numbers of houses in large cities using numbered streets have accustomed the public to memorise groups of five and even six figures. Thus, eighty-nine one hundred and first street is as

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easily remembered as b t f k w. It seems to me, therefore, that the nomenclature used in *H.A.*, **51**, would be convenient for faint objects, supplementing the usual notation for bright objects, as we use Durchmusterung numbers for the faint, and Bayer letters for the bright stars. The method of co-ordinates has the great advantage that it can be extended indefinitely to smaller and smaller objects. This will be indispensable with improved instruments and photographs. An artificial notation requires that each designation shall be explained before it can be used; a very serious objection. It seems unnecessary to go to the expense of publishing another Atlas of the Moon, arranged according to a systematic plan, since one already exists in *H.A.*, **51**, and the plates are at the service of the Committee if desired for this purpose.

(4) My comments and replies may be published if the Committee desires to do so. I hope that this may be done in the case of other astronomers, as otherwise the material collected will have but little value.—Yours very truly,

EDWARD C. PICKERING.

H. G. Tomkins:—Would retain the present system, but suggests the division of the surface into districts, each bearing the name of some prominent formation in it. Boundaries to be lines of latitude and longitude, 20° apart. Positions of objects in each division to be recorded. Gives a list of 22 divisions. According to the system,

Eratosthenes would be Copernicus 28/38.
Linné would be Posidonius 61/61.

Thinks map very desirable.

L. Weinek: — Prefers Mr. Saunder's suggestions, *i.e.* to rectify Mädler's nomenclature. Latin letters for depressions and Greek letters for elevations. Calls attention to Mädler's proposals on p. 28 of *Der Mond*, which would help in clearing up doubtful points. Suggests the construction of new charts for the foreshortened portions near the limb, as though they were seen from their zenith.

H. C. W.:—Is opposed to any great change. Would adhere to the names, letters, and numbers of Neison as far as possible, since Neison's book is probably in the possession of five times as many workers as any other large map such as Schmidt's.

Dr. Max. Wolf:—In spite of the ingenuity of the other proposals, can assent only to Mr. Saunder's,—

(1) Because of publications already in existence, which would have to be translated.

(2) Because a numerical system is not so convenient for amateurs.

(3) Because the system of actual co-ordinates must be in use

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ultimately in addition to the names; and any artificial equivalent for co-ordinates would be a *third* system in use.

The decisions of the Committee will be taken in the light of these opinions, for which we are grateful to the writers. At present we are still without a chairman, though the appointment is under consideration by the Accademia dei Lincei, as leading academy for the time being.

H. H. Turner,
Secretary to the Committee on Lunar Nomenclature.

University Observatory, Oxford:
1908 *October* 26.

Comet Committee.

The following communication has been received from Professor Barnard :—

"The Astronomical and Astrophysical Society of America, at its meeting last August, appointed a committee on comets, consisting of—

George C. Comstock, *Chairman.*
Edward E. Barnard.
Charles D. Perrine.
Edward C. Pickering.

"The committee proposes to assist in making as effective as possible, co-operation in the physical study of comets, and especially with respect to the coming apparition of Halley's comet."